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TEACHING CLINICAL NURSING BY CLOSED CIRCUIT TV.

BY- GRIFFIN, GERALD J. KINSINGER, ROBERT E.
CITY UNIV. OF NEW YORK, BRONX COMMUNITY COLL.

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TO TEST THE EFFECTIVENESS OF CLOSED-CIRCUIT TELEVISION IN TRAINING NURSES, THIS DEMONSTRATION PROJECT EVALUATED THREE EXPERIMENTAL GROUPS OF 15 STUDENTS AND FOUR CONTROL GROUPS OF 10 STUDENTS. IN ADDITION TO INCREASING TEACHING CAPACITY BY FIVE STUDENTS PER INSTRUCTOR, THE FOLLOWING BENEFITS WERE NOTED FROM SEVEN EVALUATIVE QUESTIONS POSED TO STUDENTS, INSTRUCTORS, AND PERSONNEL. MORE FREQUENT CONTACT AND INDIVIDUALIZED INSTRUCTION ENHANCES THE SAFETY FACTOR, AND THERE WERE NO NEGATIVE PATIENT REACTIONS TO THE PROJECT. SKILL DIFFERENCES AMONG GROUPS WERE MINIMAL IN BOTH PERFORMANCE AND WRITING OF CLINICAL RECORDS. THERE WAS NO RESISTANCE TO THE EXPERIMENT ON THE PART OF STUDENTS, ALTHOUGH RESISTANCE OF FACULTY VARIED. HOSPITAL PERSONNEL GAVE POSITIVE SUPPORT AND REPORTED NO INTERFERENCE WITH HOSPITAL ROUTINE. THE FACULTY FELT MODIFICATIONS WERE NEEDED TO ADAPT TEACHING METHODS TO TELEVISION, ESPECIALLY SINCE IDEAS MUST BE COMMUNICATED VERBALLY RATHER THAN DEMONSTRATED ON THE SPOT. HOWEVER, THE MORE FREQUENT INSTANTANEOUS AND INDIVIDUALIZED OBSERVATIONS, FREE OF DISTRACTION, WON STAFF SUPPORT. NEW POSSIBILITIES WILL BE EXPLORED WITH THE USE OF PORTABLE VIDEO TAPE RECORDERS AND KINESCOPE, WHICH ENABLES STUDENTS TO REVIEW PERFORMANCE AND PRESERVE VALUABLE LEARNING EXPERIENCES. (DE)

TEACHING CLINICAL NURSING BY CLOSED CIRCUIT TV

A demonstration project of the
Department of Nursing, Bronx Community College
at
Montefiore Hospital in New York City

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Principal Investigators:

Professor Gerald J. Griffin Dr. Robert E. Kinsinger

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CAN AN INCREASED NUMBER OF NURSING STUDENTS BE TAUGHT AS EFFECTIVELY IN THE CLINICAL SETTING THROUGH THE USE OF TELEVISION AS WITH MORE CONVENTIONAL MEANS?

To answer the question above the experimentation described herein has been conducted by the Department of Nursing of Bronx Community College at Montefiore Hospital in New York City.

College officials and nursing education leaders consider the instructional problem.

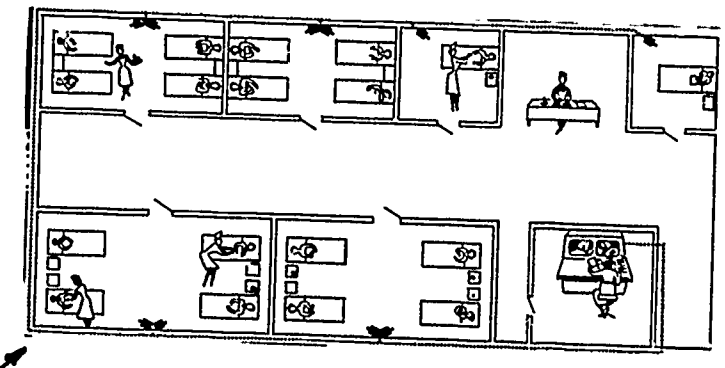
WHAT IS THE INSTRUCTIONAL PROBLEM?

The number of nursing students assigned to an individual clinical instructor is severely restricted by the need for the instructor to move from room to room in the hospital where students are with patients. The

trend to build more and more private rooms in hospitals has increased the isolation of the instructor from the students in their "clinical classrooms." The growing emphasis of nursing education on the intensive use of carefully selected learning experiences also has increased the need for more frequent contact between the student and instructor during the period of clinical practice. Patient safety is also an ever present concern.

WHAT EQUIPMENT WAS USED AND HOW DOES IT WORK?

A closed circuit TV system was installed on a medical floor of the hospital to enable an instructor to have immediate visual and verbal contact with 15 practicing students. The switching system permits the instructor to concentrate her time on those students most in need of assistance at a particular moment. However, the instructor remains instantly accessible to any other student. The cameras send pictures and sound from the patient rooms to an instructor receiving station (monitor room).



Nursing student who has two-way communication with her instructor in monitor room

Automatic TV cameras mounted on wall with wide angle lens

Monitor room with nursing instructor watching students and teaching as necessary by means of wireless receivers worn by students

Fifteen cameras are tied to a central station

Only nurse educators and authorized visitors are permitted to enter the room where the instructor receives the TV pictures, hears, and talks to students. This arrangement assures the patient of the same privacy that he was afforded previously when the nursing instructors visited patient rooms to instruct students. To reassure patients in regard to provisions for privacy an informational booklet is given to each patient.

The system is discussed with individual patients by a nursing instructor

In addition, each patient has the plan explained to him in person. The patient must agree to participate.

Nursing care is given in full view of camera...

The instructor may observe either of two monitors. The pictures on the screen of the monitor on the right automatically change every 12 seconds thus permitting the instructor to observe each student twice every 6-1/2 minutes. The instructor can operate the monitor on the left manually so that she can do individual teaching or respond to a call from a student. The instructor may leave the monitor to go to a patient's room when necessary. No television technicians or auxiliary personnel are necessary to operate the equipment.

...while the instructor observes from the monitor room

The cameras, prominently mounted on brackets high on the wall, are kept covered except when a nursing class is being conducted. A microphone is mounted on the wall of the patient's room to pick up the conversation between the nursing student and the patient when they are "on camera."

Cameras are uncovered just before a teaching session. Covered cameras between sessions reassure patients that they are not being observed without their knowledge

A tally light in the patient's room indicates when the system is operating. The student is able to hear the instructor through a small receiving set worn in the ear. If the student wishes to contact the instructor the fact is communicated by a button which is also mounted on the wall beside the patient's bed.

Students wear receiving sets so that the instructor's comments need not be overheard

WHAT ABOUT COST?

Recent improvements in closed circuit television have brought the cost of purchase and installation within reach of the average nursing education budget. A brief summary of cost considerations may provide the reader with some guidelines for economic evaluation of the use of closed circuit TV in teaching clinical nursing. The expenditure cited below is for a prototype which demanded some engineering experimentation with switching components, sound pick-ups and other units of the system. Therefore, the cost was higher for this experimentation than could be expected for a second installation.

The entire cost of the fifteen camera system including two monitors, manual and automatic switching system, cables and plugs, wireless audio communication system and complete installation was $30,956.

The potential benefits of closed circuit TV envisioned by nursing instructors who experimented with this method of clinical instruction include a minimum increase in student capacity of five students per instructor. This means that, in the case of Bronx Community College, teaching all students by TV might permit a nursing class of about 100 students and 10 clinical instructors to increase to a capacity of 150 students with the same instructional staff. From an economic standpoint this means an equivalent increase of five instructors whose salaries in a single year would exceed the total cost of the closed circuit TV system (if one could find instructors to employ).

WHAT RESEARCH WAS CONDUCTED TO EVALUATE THE EQUIPMENT AND INSTRUCTIONAL METHOD?

To test the effectiveness of teaching with a television system providing immediate visual and verbal contact between students and instructor seven key questions were posed on which to focus a research plan.

1. Is it possible for an instructor to satisfy safety factors involving work with hospital patients, while, at the same time, meeting the needs for individualized instruction of an increased number of nursing students?

2. Are there differences in student nursing skills which result when the instructor uses closed circuit television to teach and to evaluate student performance?

3. Will patients accept what they might consider an invasion of privacy involved in this type of teaching?

4. Do faculty and students resist teaching and learning by closed circuit TV?

5. Is there resistance to this system of instruction from hospital personnel?

6. Will normal hospital operations be affected by using television in this way?

7. Can nursing instructors readily adapt their clinical teaching skills to the use of closed circuit TV?

The study designed to answer the above questions stipulated 15 students in each of three experimental groups (A) and 10 students in each of four control groups (B). Clinical instructors taught the A groups and the B groups alternately to reduce validity problems due to incomparable teaching ability. Daily pre-clinical and post-clinical conferences were conducted in the same manner for both A and B groups. Therefore, the most important variables with which the design was concerned were:

a) Instructor-student ratios (1:15 Group A, 1:10 Group B).

b) The teacher contact with Group A students during clinical practice was by television. There was direct contact between the teacher and student for Group B.

Instructors carefully analyze the ways in which TV can be used to teach clinical nursing

The various instruments and techniques used to collect data for answers to the seven questions included:

a) Tabulation of instructor's activities during teaching periods.
b) A safety check list.
c) Tabulation of responses in post conferences.
d) Tabulation of frequency and kind of help needed by students.
e) Evaluation devices for nursing skills.
f) Clinical records.
g) Examination grades.
h) Recorded interviews with patients, students, and hospital personnel.

Patient interviews are tape recorded to find out what they think about being observed on a television screen while being cared for by students

BRIEFLY, WHAT WERE SOME OF THE ANSWERS TO THE SEVEN RESEARCH QUESTIONS?

Safety

Instructors on the experimental floor can contact a student for teaching purposes about 8 times more frequently than can the instructors on the control floor. The TV contacts are brief. However, TV eliminates the distraction which occurs during a face-to-face contact with the student and patient. Therefore, the TV contacts were considered adequate.

The students on the experimental floor have individualized instruction that occurs more frequently than that given on the control floor. When this frequent instructional contact is combined with the number of observations made on the automatic monitor, the opportunity to satisfy the safety factors is greatly increased.

Differences in student nursing skills

On the basis of less than perfect evaluation instruments the data indicates that the difference from the experimental and control groups judged in four specific nursing activities are minimal and insignificant. The two groups of students do not seem to differ in their clinical performance, nursing skills, or their ability to write clinical records.

Patient acceptance

All patients agreed to participate before receiving care that was televised. The large number that participated at least twice seems to indicate that patients do accept this care and do not consider it an invasion of privacy.

Of the total 83 participating patients, 54 were interviewed to determine their reaction to being seen on TV by the instructor. Again the response was completely favorable. Not one patient expressed a negative reaction.

Faculty and student resistance

The student responses seem to indicate a lack of any resistance to teaching and learning through the use of TV.

The instructors were not so consistently positive because adapting to a new system of instruction involves adjustments in teaching techniques. In general, faculty reactions varied from mere acceptance to enthusiasm for the system.

Resistance from hospital personnel

As a group all responses were positive. Those interviewed (doctors, supervisors, head nurses, RN's, LPN's, nurses aides, and ward clerks) seemed to accept this type of teaching and seemed interested in its application.

Interference with hospital routine

The responses of hospital personnel indicated that they did not feel that TV affected hospital operation adversely. The head nurse thought that there was much less confusion on the unit than there usually was when students were having clinical sessions. She observed that students had no need to look for the instructor and could remain with the patients.

Adaptation of teaching skills

The instructors were able to adapt their teaching for the four skills that were taught and evaluated, but it can definitely be said that modifications are essential to meet the demands of teaching clinical nursing by TV.

Observation of the student is more frequent, free of distraction, and completely centered on the activity of student and patient. Communication is instantaneous and individualized to the student. Gross details are easily seen. Fine details may be missed or can be observed as the instructor becomes aware of the new cues she receives. She cannot use herself to demonstrate a point or procedure. Therefore, the instructor must learn to use words to replace actual demonstration, which, in turn, requires a thorough knowledge of the various components of a procedure if teaching time is to be effectively utilized.

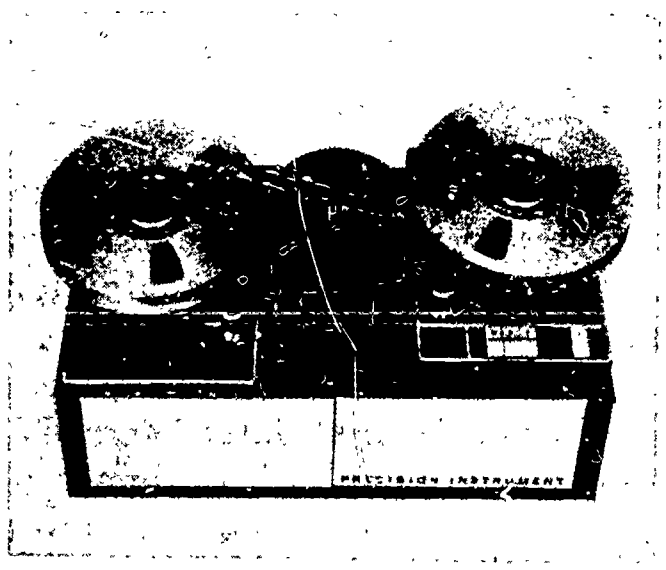
Learning to use the medium of TV for clinical teaching seems to be full of unknown possibilities. If instructors maintain an analytical and imaginative approach to this type of teaching, keeping in mind the advantages and disadvantages of TV, it is found that teaching becomes extremely flexible.

Are there other uses for closed circuit TV in clinical nursing instruction?

The advent of portable videotape recorders has opened up vast new possibilities for using the TV system described above. Coupled with the use of closed circuit TV for teaching clinical nursing the new portable video tape recorder can be used as an important adjunct to clinical instruction. Audio and video signals

being received by the instructor during the period that the students are practicing nursing skills in the hospital may be recorded for playback.

During the post clinical conference immediately following experience with patients, students can view their own performance with patients. This will afford the students, with guidance from their instructor, an opportunity to analyze their physical and verbal nursing skills and attitudes through careful observation of themselves and fellow students in actual nursing situations.

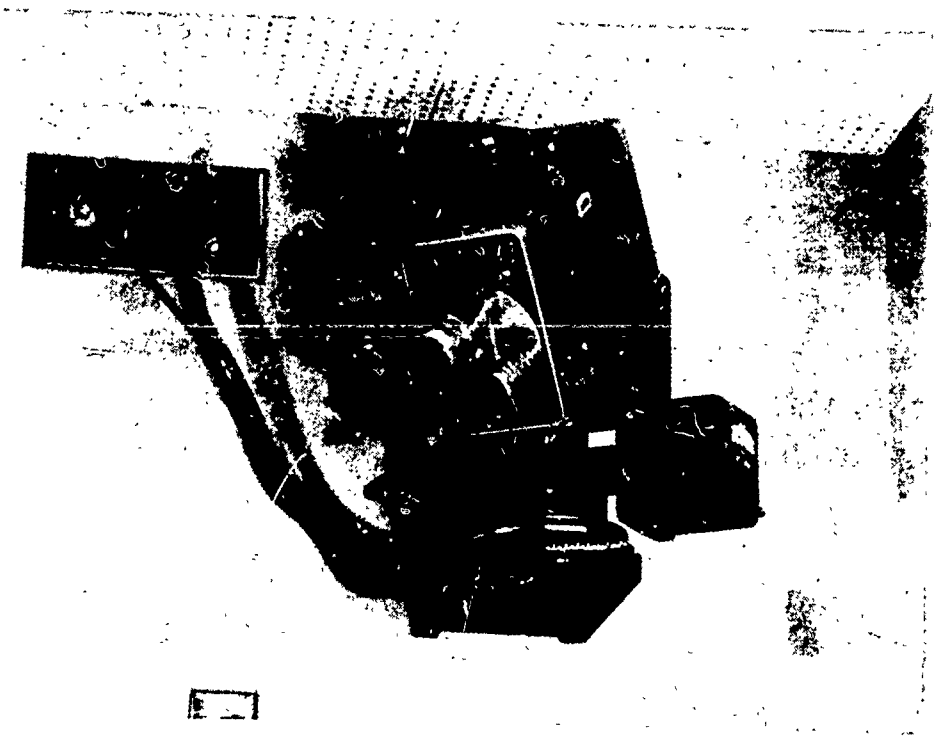


The portable video tape recorder adds a new dimension to nursing education

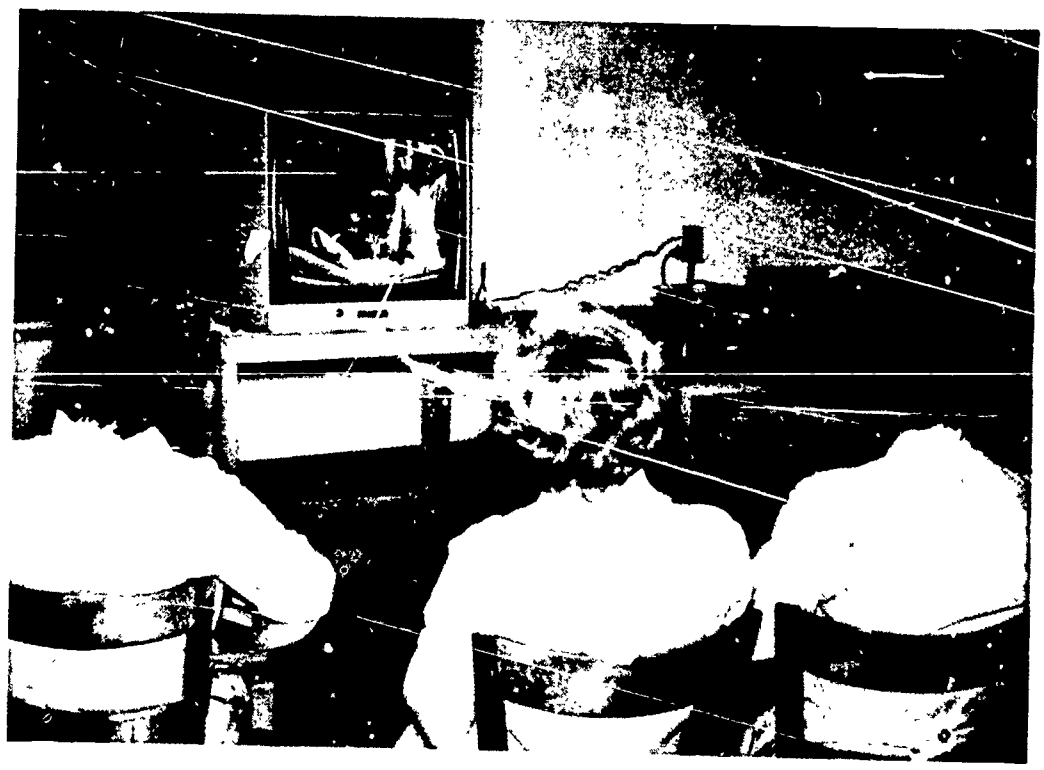
In addition, appropriate clinical learning experiences . nsmitted by TV can be preserved for future use by kinescope. A series of effective teaching films can be developed which would be of value to schools of nursing everywhere.

The evaluation of student performance might also become more valid and reliable if all instructors in a program could view a student in the same clinical situation.

All of these possibilities are currently being investigated by the same research team that undertook the original study of teaching clinical nursing by closed circuit TV.



For making videotape recordings of detailed nursing procedures a remotely controlled camera with variable lens is used



Clinical experiences are permanently captured for student and faculty analysis

WHAT ARE THE IMPLICATIONS GROWING OUT OF THE USE OF CLOSED CIRCUIT TELEVISION FOR TEACHING CLINICAL NURSING?

The use of closed circuit television for teaching clinical nursing gives promise of great gains to nursing education. Under optimum conditions the number of students that existing nursing faculties can teach might be more than doubled if closed circuit TV were generally employed in hospitals for clinical instruction. This vast increase could be accomplished without loss of instructional quality. In fact, much of the research evidence suggests a definite improvement in the quality of instruction, particularly in regard to patient safety, when using closed circuit TV.

Concomitant with the spread of a new instructional idea there should be a continued effort to refine the system and to add new dimensions to the teaching plan. A new concept of teaching and new instructional equipment demand additional research to determine its most effective use. There must be a quickening of interest on the part of faculties in studying the potentialities and in learning how these new developments may have meaning for them in tackling the almost insurmountable educational challenge in the years ahead.